What is claimed is:

1. A computer system, comprising:

a hard real-time operating system;

an application running under the hard real-time
operating system; and

a security process running under the hard real-
time operating system;

the security process is configured to
periodically, in hard real-time, check the
integrity of the application and/or a data
element used by the application and, if the
integrity check of the application or the data
element indicates that the application or data
element has been tampered with, notify a user
of the computer system and/or shut down at
least part of the computer system or
application, and

the security process includes a challenge handler
that is configured to receive a challenge from
an external monitor and provide a response
thereto within a predetermined amount of time,
wherein the external monitor is configured so
that if the external monitor does not receive
the response within a predetermined amount of
time from sending the challenge, the external
monitor notifies an administrator and/or shuts
down at least part of the computer system or
application.

2. In a computer system running a real-time operating system, a computer security method, comprising:

executing a security process under the real-time operating system, wherein the security process is configured to periodically, in hard real-time, check the integrity of an application and/or a data element used by the application and notify a system administrator and/or shut down the application if the integrity check of the application or the data element indicates that the application or data element has been tampered with;

sending a challenge to the security process or to a challenge handler that monitors the integrity of the security process; and

notifying an administrator if a response to the challenge is not received within a predetermined amount of time.

3. A computer system, comprising:

a dual-kernel operating system comprising a real-time kernel and a non-real-time kernel;

a first real-time thread running under the real-time kernel, the first real-time thread being configured to monitor the integrity of an application running under the non-real-time kernel;

a second real-time thread running under the real-time kernel, the second real-time thread being configured to monitor integrity of the first real-time thread; and

a security process running under the non-real-time kernel, the security process being configured to check the integrity of the first real-time thread and/or the second real-time thread.